



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,794	10/19/2001	Heui Gi Son	2080-3-44	9216
35884	7590	04/05/2005	EXAMINER	
LEE, HONG, DEGERMAN, KANG & SCHMADEKA, P.C. 801 SOUTH FIQUEROA STREET 14TH FLOOR LOS ANGELES, CA 90017			VARTANIAN, HARRY	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,794

Applicant(s)

SON ET AL.

Examiner

Harry Vartanian

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2001.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5 and 8-10 is/are rejected.
7) ☒ Claim(s) 6 and 7 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 19 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/2003.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because of the formatting and language. Abstract should be written in paragraph format, no semicolons, and without the use of Claim language. Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because of the following informalities: The acronym "EFM" is not defined.

Appropriate correction is required.

Claim Objections

3. Claims 5-7 and 10 are objected to because of the following informalities: The acronyms RDS and RLL are not defined. Appropriate correction is required.
4. Claim 2 is objected to because of the following informalities: There is a typo in "the each of..." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-4 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Schouhamer Immink(US Patent 5,790,056). Immink discloses an 8/15 compact disc encoding method that uses 3 merge bits. Regarding Claim 1, he meets the following limitation of the Claim:

Art Unit: 2634

binding input digital data into unit blocks constituted by a plurality of bytes; **fig 1**

modulation-coding each byte of the input data blocks by using a code conversion table; and **Fig 7 and 8, (Column 2, Lines 59-60)**

allocating a merging bit in a block unit for the modulation-coded input data in a block unit. **(Column 3, Lines 6-9)**

Regarding Claim 3, Immink meets the following limitation of the Claim:

the merging bit allocated in a block unit is made of three bits. **(Column 3, Lines 6-9)**

Regarding Claim 4, Immink meets the following limitation of the Claim:

each of the modulation-coded input data block is encoded into a code word of a fifteen bit length by an 8/15 conversion table. **(Column 7, Lines 63-67)**

Regarding Claim 8, the rejections above meet the limitations of the Claim. The decoding step is disclosed in figure 5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 2634

6. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schouhamer Immink(US Patent 5,790,056). Immink meets all the limitations of the Claim(See above paragraphs), except disclosing the use of "three to seven bytes" of data.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use data blocks of 3 to 7 bytes in Immink's invention. Applicant has not disclosed that using data blocks of 3 to 7 bytes provides an advantage, is used for a particular purpose, or solves a stated problem. Therefore, it would have been obvious to one of ordinary skill in this art to modify Immink to obtain the invention as specified in Claims 2 and 9.

7. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schouhamer Immink(US Patent 5,790,056) in view of Tanaka (United States Patent# 5774078). Immink meets all the limitations of the Claims(See above paragraphs), except disclosing that "the merging bit is selected...so that the RDS value may be minimum while not violating the RLL restraints." Immink discusses not violating the RLL restraints, but not specifically adjusting the merging bit accordingly.

However, Tanaka et al discloses:

"One measure expressing the attributes of an RLL code is the (d,k) constraint. The (d,k) constraint defines the run-length limits of the code word where constraint d is the minimum and constraint k is the maximum number of consecutive 0s permitted between two 1s. **The (d,k) constraint must be satisfied both within individual code words and in the mergings between two or more consecutive code words.**" (Column 1, Lines 45-54)

"According to the present invention as described above, it is possible to provide a digital modulation method and apparatus therefor whereby redundancy **resulting from the merging bit can be reduced and the maximum run length can be suppressed, thus increasing the minimum inversion interval while suppressing the maximum inversion interval of the channel signal.** This is achieved specifically in digital modulation **using a constraint** $d=2$ with code words separated by a 1-bit merging bit by changing any 101 bit pattern centered on the merging bit to a 010 bit pattern resulting in at least three consecutive 0 bits adjacent to both sides of the merging bit, and further changing the merging bit to 1 and any 00000 bit sequence **adjacent to the merging bit to a 00100 bit sequence if the number of consecutive 0 bits resulting from the preceding conversion of the code word conjunction exceeds the maximum run length of 0s permitted.** By further using this digital modulation method and apparatus for recording, it is also possible to provide a recording medium in which **the minimum length of the formed marks and spaces is long while the maximum length thereof is as short as possible.**" (Column 13, Line 8-27)

Therefor it would have been prima facie obvious to adjust the merging bits in order to not violate the RLL constraint. A motivation to combine is disclosed by Tanaka et al above wherein he states that violating the RLL can result in bit errors, since the merge bit's function is to prevent interference between bytes.

Allowable Subject Matter

8. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening Claims –AND- the objection above for Claim 6 is overcome.

9. Claim 7 would be allowable if the above objection is overcome.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 571.272.3048. The examiner can normally be reached on 10:00-6:30 Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571.272.3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/039,794
Art Unit: 2634

Page 6

Harry Vartanian
Examiner
Art Unit 2634

HV



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800